

REMARKS

Applicants respectfully request entry of the amendments and remarks submitted herein. Applicants have amended the claims to correct the misspelling of chlorine in claim 19. Applicants have also added dependent claims 43-45. Support for the amendment to claim 19 and for new claims 43-45 can be found in the originally filed claims and throughout the specification. Therefore, no new matter has been introduced.

Claims 18-45 are pending. Applicants respectfully request reconsideration and allowance of the pending claims.

Rejections under 35 U.S.C. § 103

The Examiner rejected claims 18-38 and 40-41 under 35 U.S.C. § 103(a) as being unpatentable over Wasserman *et al.*, U.S. Pat. No. 5,959,102 (hereinafter "Wasserman") in view of Kettlitz *et al.*, U.S. Pat. No. 6,235,894 (hereinafter "Kettlitz"). Specifically, regarding independent claims 18, 32, 35 and 37, the Examiner found it obvious to combine the method of Kettlitz with the process of Wasserman because stabilized low-protein starch has wide applications in food and pharmaceutical industries. Additionally, the Examiner rejected independent claims 32 and 35 as unpatentable because, according to the Examiner, the claimed ranges for specific reaction conditions (active chlorine concentration, bleaching parameters, and starch protein content) were disclosed in the cited references. Applicants respectfully traverse this rejection.

Wasserman relates to purified starches teaching enzymatic removal of surface-associated protein contaminants from starch granules using thermally tolerant proteolytic enzymes. Wasserman is referenced in paragraph 4 of the pending application under its European Pub. No. EP0499306, the European equivalent of U.S. Pat. No. 5,959,109. Wasserman differs from the claimed invention in that Wasserman does not teach stabilized starches.

Kettlitz relates to heat stable high viscosity starches and teaches reacting high viscosity starch with activated chlorine under alkaline conditions. Kettlitz is referenced throughout the specification of the pending application under European Pub. No. EP0811633, the European

equivalent of U.S. Pat. No. 6,235,894. (See, e.g., paragraphs 10, 49, 52, and 95). Kettlitz does not teach stabilized starches with the viscosity and organoleptic properties achieved by the processes and compositions of the claimed invention.

Applicants directly compared the properties of starch produced by the claimed processes with starch prepared using the Kettlitz methods and showed a surprising difference in stability. Evidence of these unexpected results can be readily found in the specification. For example, in paragraph 49, the Applicants reported that, while the methods of Kettlitz produced heat-stable starch, “surprisingly the stabilization effect is further pronounced with the treatment of the current invention.” The unexpected stability is noted in paragraph 95, which acknowledges that, “[s]urprisingly, the stabilization effect is more pronounced when the bleaching is preceded by a protease treatment...” As such, Applicants believe that the claimed processes are non-obvious in light of the unexpected properties of the starch produced.

Moreover, these statements are supported by the experimental data. Referring to Example 1, these data show that starch prepared using the method of Kettlitz had a viscosity breakdown of 5%, whereas starch prepared using the processes of the claimed invention had a remarkable viscosity breakdown of -8%. (Table 1). The Brabender profile shows the unexpected rising viscosity curve and lower viscosity drop of starch produced from the claimed process. (FIG 1). As a whole, these data demonstrate the surprisingly improved stabilization of starch prepared by the claimed process, relative to the starch produced by the method of Kettlitz.

Equally important, Wasserman provides no indication that the proteolytic treatment would effect stabilization. In fact, in Example 6, Wasserman teaches that deproteinization has no effect on the thermal properties of the starch, and minimal effect on starch pasting properties. (See Wasserman, col. 15, lines 37-39) Accordingly, a reading of Wasserman provides no reason to expect that combining the methods of Wasserman and Kettlitz would yield starch with the stability and viscosity observed.

Therefore, because the processes of the claimed invention result in starch with unexpected properties, the Applicants believe that independent claims 18, 32, 35 and 37 are non-

obvious over Wasserman and Kettlitz. The Applicants respectfully request the Examiner withdraw these rejections.

The case law supports this position. The Supreme Court addressed the non-obviousness requirement for combining elements found in different prior art references in KSR International v. Teleflex Inc., 127 S. Ct. 1727 (2007). To support a *prima facie* case of obviousness, the Examiner must show “there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *Id.* at 1741. The Supreme Court recognized that, “a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *Id.* The Court noted that persons of skill in the art would consider an invention to be non-obvious where, “the elements worked together in an unexpected and fruitful manner.” *Id.* at 1740. Consequently, a showing of unexpected results can rebut a *prima facie* case of obviousness.

Likewise, the MPEP supports this position. A presumption of obviousness based on a claimed invention falling within a prior art range is rebuttable by showing unexpected results relative to the prior art. MPEP § 2144.05. An Examiner should consider all evidence of non-obviousness, including evidence of unexpected results.” MPEP § 2141. Therefore, the Applicants respectfully request that the Examiner consider the experimental results reported in the present Application and withdraw these rejections.

The Examiner rejected dependent claims 19-31, 33, 34, 36, 38, 40 and 41 on the same grounds as discussed above. In addition, the Examiner rejected dependent claims 39-40 and 42 as being unpatentable over Wasserman in view of Kettlitz and further in view of Wongsuragrai et al., EP 0823439 (hereinafter “Wongsuragrai”). Applicants respectfully traverse this rejection.

As discussed above, the Applicants believe that the unexpected results of the claimed processes demonstrate the non-obviousness of their invention. Furthermore, Wongsuragrai does not cure the deficits in Wasserman and Kettlitz discussed above, because it does not teach methods for producing starch with superior stability. Therefore, where all of the independent claims are non-obvious over Wasserman and Kettlitz, as a result of the unexpected stability of

the starch produced, the claims depending therefrom must also be non-obvious. The Applicants respectfully request that the Examiner withdraw these rejections.

In view of the above, Applicant requests that the rejection of claims 18-42 under U.S.C. § 103(a) be withdrawn.

CONCLUSION

Applicant submits that claims 18-45 are in condition for allowance, which action is respectfully requested.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in the paper. The Examiner is invited to telephone the undersigned agent if such would further prosecution.

No fee is believed due. Please apply any charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

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/M. Angela Parsons/

Date: _____

M. Angela Parsons, Ph.D.
Reg. No. 44,282

Fish & Richardson P.C.
60 South Sixth Street, Suite 3300
Minneapolis, MN 55402
Telephone: (612) 335-5070
Facsimile: (877) 769-7945